CLAIMS

1. A method for quantifying a small particle low density lipoprotein in a test sample, comprising a first step for separating the small particle low density lipoprotein from other low density lipoproteins, and a second step for measuring cholesterol, triglycerides or proteins in the separated small particle low density lipoprotein.

2. A method according to claim 1, wherein a polyanion and a divalent cation are used for separating the small particle low density lipoprotein from other low density lipoproteins in said first step.

3. A method according to claim 1 or 2, wherein a monovalent cation is further used for separating the small particle low density lipoprotein from other low density lipoproteins in said first step.

4. A method according to claim 2 or 3, wherein the polyanion used in said first step is selected from the group consisting of heparin, phosphotungstic acid and dextran sulfate.

5. A method according to any one of claims 2 to 4, wherein the divalent cation used in said first step is selected from the group consisting of Mn^{2+}, Mg^{2+} and Ca^{2+}.

6. A method according to any one of claims 3 to 5, wherein the monovalent cation used in said first step is selected from the group consisting of Na^{+}, K^{+} and Li^{+}.

7. A method according to any one of claims 4 to 6, wherein, when the polyanion is added to the test sample, the final concentration of the polyanion is 10-250 U/mL for heparin, 0.02-1.25% for dextran sulfate and 0.02-1.25% for phosphotungstic acid.

8. A method according to any one of claims 5 to 7, wherein, when the divalent cation is added to the test sample, the final concentration of the divalent cation is 2.5-35 mmol/L for Mn^{2+}, 2.5-125 mmol/L for Mg^{2+} and 1-75 mmol/L for Ca^{2+}.

9. A method according to any one of claims 6 to 8, wherein, when the monovalent cation is added to the test sample, the final concentration of the monovalent cation is 0-50 mmol/L.

10. A method according to claim 1, wherein PEG is used to separate the small particle low density lipoprotein from other low density lipoproteins in said first step.

11. A method according to claim 10 wherein the final concentration of PEG is 2-5% when PEG is added to the test sample.

12. A method according to any one of claims 1 to 11, wherein the measurement of cholesterol in said second step is carried out by using a reagent which is used for quantitatively measuring cholesterol in a low density lipoprotein and which does not require fractionation.

13. A method according to any one of claims 1 to 11, wherein the measurement of triglycerides in said second step is carried out by using a reagent which is used for quantitatively measuring triglycerides in a low density lipoprotein and which does not require fractionation.

14. A method according to any one of claims 1 to 11, wherein the measurement of protein in said second step is carried out by using an anti-human apoprotein B antibody.

15. A method for separating a small particle low density lipoprotein from a test sample comprising a step in which the low density lipoprotein other than small particle low density lipoproteins is precipitated by adding a polyanion and a divalent cation to the test sample.

16. A method according to claim 15 comprising a step in which the low density lipoprotein other than small particle low density lipoproteins is precipitated by also adding a monovalent cation to the test sample.

17. A method for separating a small particle low density lipoprotein according to claim 15 or 16, wherein the polyanion is selected from the group consisting of heparin, phosphotungstic acid and dextran sulfate.

18. A method for separating a small particle low density lipoprotein according to any one of claims 15 to 17, wherein the divalent cation is selected from the group consisting of Mn^{2+}, Mg^{2+} and Ca^{2+}.

19. A method for separating a small particle low density lipoprotein according to any one of claims 15 to 18, wherein the monovalent cation is selected from the group consisting of Na^{+}, K^{+} and Li^{+}.

20. A method for separating a small particle low density lipoprotein according to any one of claims 17 to 19, wherein, when the polyanion is added to the test sample, the final concentration of the polyanion is 10-250 U/mL for heparin, 0.02-1.25% for dextran sulfate and 0.02-1.25% for phosphotungstic acid.

21. A method for separating a small particle low density lipoprotein according to any one of claims 18 to 20, wherein, when the divalent cation is added to the test sample, the final concentration of the divalent cation is 2.5-35 mmol/L for Mn^{2+}, 2.5-125 mmol/L for Mg^{2+} and 1-75 mmol/L for Ca^{2+}.

22. A method for separating a small particle low density lipoprotein according to any one of claims 19 to 21, wherein, when the monovalent cation is added to the test sample, the final concentration of the monovalent cation is 0-50 mmol/L.

23. A method for separating a small particle low density lipoprotein from a test sample comprising a step in which PEG is added to the test sample to precipitate the low density lipoprotein other than small particle low density lipoproteins.

24. A method for separating a small particle low density lipoprotein according to claim 23, wherein the final concentration of PEG is 2-5% when PEG is added to the test sample.

25. A kit for measuring a small particle low density lipoprotein comprising: a separation agent that includes a polyanion and a divalent cation; and a reagent for measuring the low density lipoprotein, wherein the kit measures cholesterol, triglycerides or proteins in the small particle low density lipoprotein.

26. A kit for measuring a small particle low density lipoprotein according to claim 25, wherein the separation agent further includes a monovalent cation.

27. A kit for measuring a small particle low density lipoprotein comprising: a separation agent that includes PEG; and a reagent for measuring the low density lipoprotein, wherein the kit measures cholesterol, triglycerides or proteins in the small particle low density lipoprotein.

28. A kit according to claim 25 or 26, wherein the polyanion is selected from the group consisting of heparin, phosphotungstic acid and dextran sulfate.

29. A kit according to claim 26 or 28, wherein the divalent cation is selected from the group consisting of Mn^{2+}, Mg^{2+} and Ca^{2+} and the monovalent cation is selected from the group consisting of Na^{+}, K^{+} and Li^{+}.